A TREATMENT OF EPIPHYSEAL DISPLACEMENTS AND FRACTURES OF THE UPPER EXTREMITY OF THE HUMERUS DESIGNED TO ASSURE DEFINITE ADJUSTMENT AND FIXATION OF THE FRAGMENTS.

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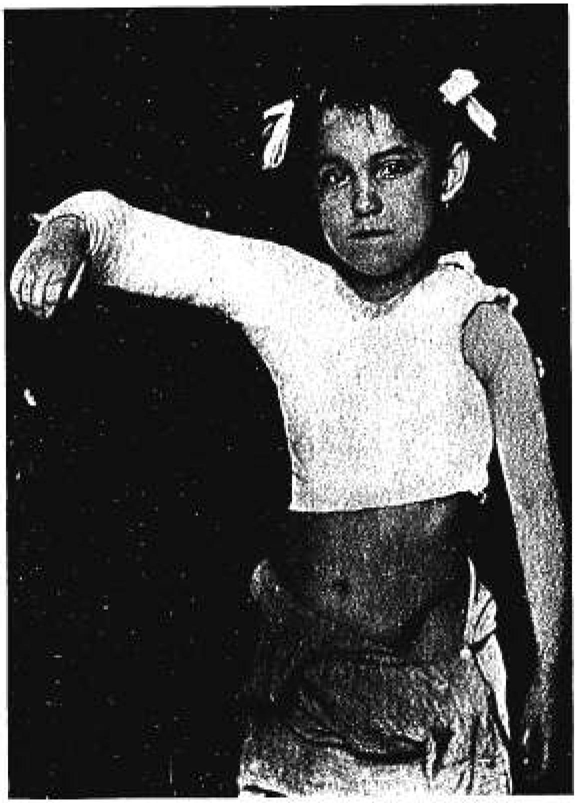
In characteristic cases of epiphyseal separation of the head of the humerus, or similar fractures in later years, one notes a sharp projection below and in front of the acromion process which represents the anterior and upper extremity of the shaft, the head being relatively below, within, and behind it.

In many of the reported cases this projection has been mistaken for a dislocation and unavailing attempts have been made to reduce it, the deformity reappearing when the arm is placed by the side. Nor does a correct diagnosis lessen materially the difficulty of treatment. To quote Hamilton, "It is proper to say, that complete reduction is seldom accomplished and permanently maintained, owing probably to the advantageous action of the muscles which tend to produce the displacement, and in part also to the difficulty of applying any apparatus or dressing which shall act efficiently on the fragments."

About six years ago, a girl seven years of age was brought to the Hospital for Ruptured and Crippled who presented the typical signs of epiphyseal fracture, the injury having been received two weeks before.

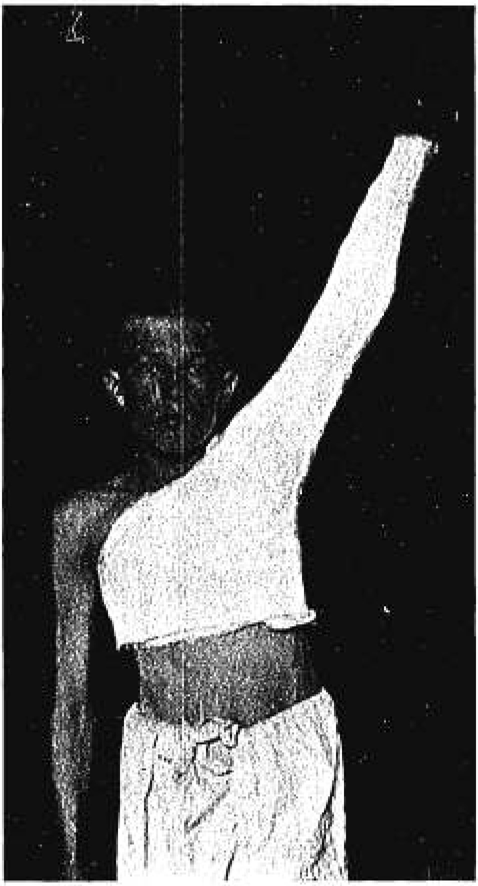
In this case I first employed the method of treatment similar in principle to that which I have used successfully for the corresponding injury at the hip-joint, namely, to reduce the displacement by leverage of the extremity and to appose the fragments by adjusting the attitude of the limb to conform to the separated head, or essentially in full abduc-

FIG. 1.



Fracture of the arm in complete abduction. Photograph of the first patient treated in March 1902.

FIG. 2.



The shoulder spica fixing the arm in extension, abduction and elevation.

4160

tion, the alignment being aided by manipulation of the inner fragment and by tension on the capsule and the surrounding muscles.

The details of the method are as follows: The patient having been anæsthetized, the adherent fragments are separated by forcible manipulation. The head is then grasped, as well as may be, by the fingers and under traction the arm is abducted gradually to the extreme limit, the acromion serving as a fulcrum to direct the extremity of the diaphysis downward toward the epiphysis. When the fragments are in apposition the abducted arm may be drawn somewhat forward, if necessary, to assure proper adjustment. One now proceeds to fix the parts in this attitude by means of what may be called a shoulder spica. This, as applied to the original case, is illustrated in Fig. 1. A better method, the one used in the second case, that of a boy twelve years of age, in which the reduction undertaken twelve days after the injury was somewhat more difficult, and now recommended, is shown in Fig. 2. The extended arm is raised over the head by rotation of the scapula so that one may better utilize muscular tension and the force of gravity to fix the fragments.

In my experience, union after epiphyseal displacement is prompt. Thus, after several weeks, the apparatus may be removed, to permit massage and appropriate exercises. In the limited number of cases that I have treated by this method, function has been perfectly restored.

If the fragments have become so adherent that they can not be separated, or if for any reason adjustment is unsatisfactory, the joint should be opened, but the advantage of the attitude and the method of fixation will then, I think, be even more apparent.

In the ordinary mode of treatment after an attempt has been made in one way or another to adjust the fragments, the arm is fixed to the body or in some indifferent attitude in which the complete or partial redisplacement is, from the nature of the injury, almost certain. The effect of this deformity is to limit abduction by contact of the upper extremity of the humerus with the acromion and by pressure of the displaced head on the lower border of the capsule. It may be assumed also, that, aside from the impairment of function, a certain loss of growth may be expected unless the cartilage is replaced in fair relation to the diaphysis.

I have limited myself thus far to the class of cases in which I have had actual experience, but the same treatment may be utilized for fractures in this neighborhood in older subjects. It seems to me, that like the similar method which I have urged for treatment of fracture of the neck of the femur, it should appeal to those who appreciate the nature of the obstacles that make the treatment of fractures in these situations so difficult and the results so unsatisfactory.

I may mention incidentally, that what has been called the shoulder spica, is a convenient and almost indispensable means for fixing the arm after operation for lateral deformity at the elbow, or whenever one desires to hold the arm securely in the extended attitude without confining the patient to bed, the elevation preventing the œdema that is almost inevitable if the limb is pendant.